Precalc Warm Up #2-2

HW Quiz #1

Solve the following systems algebraically, check # 3 by graphing on your grapher.

1.

$-5x + 2y = -3$
$4x - 3y = -6$

2.

$7x - 2y = 4$
$y = 3.5x - 2$

3.

$6x - 4y = 10$
$9x - 6y = 12$

HW Questions?

EXERCISES 2.3.1

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1. Sketch the graph of the following functions

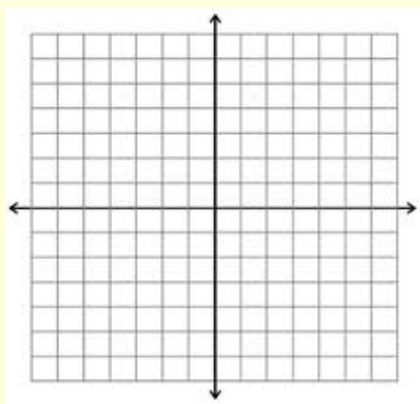
(ii) $f(x) = x - 2$

(v) $y = \dfrac{x+1}{2}$

(viii) $x + 2y = 4$

(xi) $x - \dfrac{y}{3} = 1$

(xiv) $\dfrac{4+t}{2} = q$



2. Find the gradient of the line joining the points

(b) (4, 5) and (6, 11)

3. Use the gradient–point method to find the equation of the straight line if

(a) it passes through the point (1, 1) and has a gradient of 2.

(b) it passes through the point (–2, 3) and has a gradient of 3.

(c) it passes through the point (3, –4) and has a gradient of –1.

$y - 3 = 3(x + 2)$ done!

4. Find the gradient of the straight line that is perpendicular to the straight line with gradient equal to

(a) 2. (b) -3. (c) $-\frac{2}{3}$. (d) $\frac{5}{4}$

5. Find the equation of the straight line that passes through the origin and the point (2,4).

6. Find the equation of the straight line that passes through the points (–1,2) and (0,1).

7. A straight line passes through the point (4,3) and is perpendicular to the line joining the points (–1,3) and (1,–1). Find the equation of this line.

$m?$

$m = \frac{-1-3}{1+1} = \frac{-4}{2} = -2$

$m\perp = \frac{1}{2}$

$y - 3 = \frac{1}{2}(x-4)$

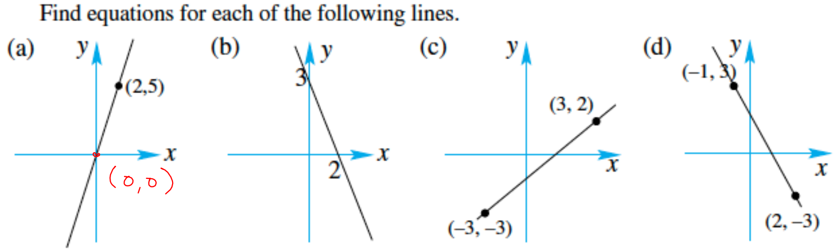
6) $m = \frac{2-1}{-1-0} = \frac{1}{-1}$

$m = -1$

$y = -x + 1$

8. The lines $px + 4y - 2 = 0$ and $2x - y + p = 0$ are perpendicular. Find the value of p.

9. Find equations for each of the following lines.



$\frac{4y}{4} = -\frac{px}{4} + \frac{2}{4}$

$y = \left(-\frac{p}{4}\right)x + \frac{1}{2}$

$y = 2x + p$

$-\frac{p}{4} \cdot \frac{2}{1} = -1$

$-2\left(-\frac{p}{2}\right) = -1(-2)$

$\boxed{p = 2}$

or $-\frac{p}{4} = -\frac{1}{2}$

$p = 2$

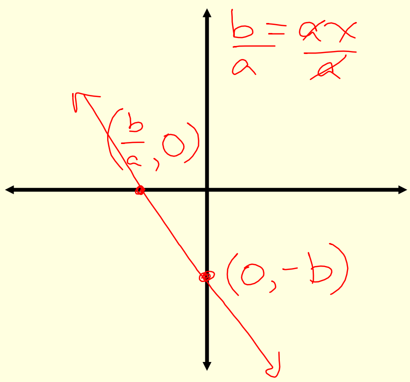
10. Sketch the graph of the following functions.

(a) $f(x) = ax - b$, $a < 0$, $b > 0$ (b) $f(x) = a^2x + b$, $b < 0$, $a \neq 0$

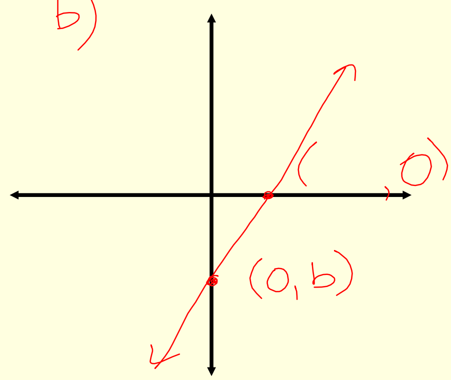
(c) $f(x) = \frac{a}{a+1}x - a$, $a > 0$ (d) $f(x) = 2a + \frac{1}{a}x$, $a > 0$

a) $0 = ax - b$

$\frac{b}{a} = \frac{\cancel{a}x}{\cancel{a}}$



b)



$0 = a^2x + b$

$x =$

10. Sketch the graph of the following functions.

(a) $f(x) = ax - b$, $a < 0$, $b > 0$ (b) $f(x) = a^2x + b$, $b < 0$, $a \neq 0$

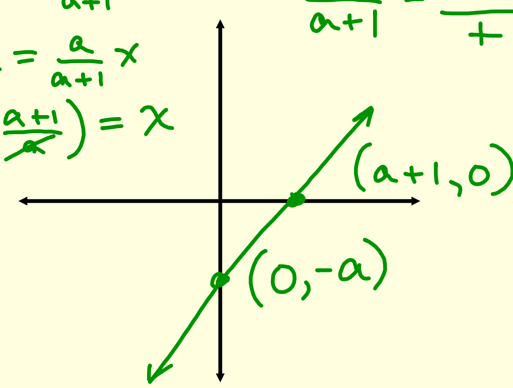
(c) $f(x) = \frac{a}{a+1}x - a$, $a > 0$ (d) $f(x) = 2a + \frac{1}{a}x$, $a > 0$

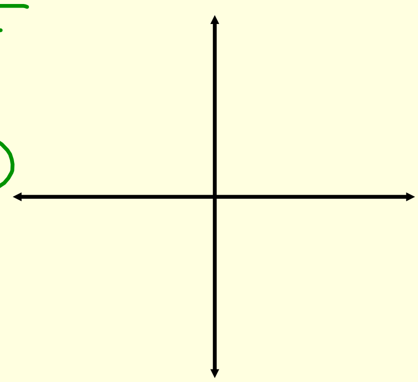
$0 = \frac{a}{a+1}x - a$

$a = \frac{a}{a+1}x$

$\cancel{a}\left(\frac{a+1}{\cancel{a}}\right) = x$

$\frac{a}{a+1} = \frac{+}{+}$





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EXERCISES 2.3.2

1. Solve these simultaneous e

(i) $$\begin{aligned} 3x - 2y &= -1 \\ 5x + 2y &= 9 \end{aligned}$$

(iv) $$\begin{aligned} 3x + 2y &= 2 \\ 2x - 6y &= -6 \end{aligned}$$

2. Solve these simultaneous e

(i) $$\begin{aligned} 3x - y &= 2 \\ 5x + 2y &= 9 \end{aligned}$$

3. Find the values of m such that these equations have no solutions.

// , same slope

(i) $3x - my = 4$

$x + y = 12$

$y = -x + 12$

$$\frac{-my}{-m} = \frac{-3x}{-m} + \frac{4}{-m}$$

$$y = \frac{3}{m}x - \frac{4}{m}$$

$$\frac{3}{m} = -1$$

$$\boxed{m = -3}$$

SL 2.3.2: Solving Systems

Solve the system for x and y:

ax + y = ab

bx - y = a^2

$$ax + bx = a^2 + ab$$

$$\frac{x\cancel{(a+b)}}{\cancel{a+b}} = \frac{a\cancel{(a+b)}}{\cancel{a+b}}$$

$$a(a) + y = ab$$

$$(a, ab - a^2)$$

Find m and t so that the system has

a. infinite solutions

Same line

b. no solution

// lines

$6x + my = 4$

$2(3x + 5y = t)$

$6x + 10y = 2t$

$m = 10 \quad t = 2$

$\neq$

$m = 10, t \neq 2$

Solve the system

Elim y

$\text{(1)} \quad x + y + z = 2$

$\text{(2)} \quad (2x - y + 3z = 9)(2) \rightarrow 4x - 2y + 6z = 18$

$\text{(3)} \quad x + 2y - z = -3 \longrightarrow x + 2y - z = -3$

$\text{(1)} + \text{(2)} \quad 3x + 4z = 11$

$\text{(3)} + 2\text{(2)} \quad (5x + 5z = 15)/5 \rightarrow {}^{-3}(x + z = 3)$

$-3x - 3z = -9$

$z = 2$

$x + 2 = 3$

$x = 1$

$\text{(1)} \quad 1 + y + 2 = 2$

$y = -1$

$(1, -1, 2)$

Solve the system

$x + y + z = 2$
$2x - y + 3z = 9$
$x + 2y - z = -3$

$$\begin{array}{cccc} x & y & z & \text{constants} \\ \end{array}$$
$$\begin{bmatrix} 1 & 1 & 1 & 2 \\ 2 & -1 & 3 & 9 \\ 1 & 2 & -1 & -3 \end{bmatrix}$$

Rows x Columns
3 x 4

Solve the system

$x + y + z = 2$
$2x - y + 3z = 9$
$x + 2y - z = -3$

order
rows x columns

(x, y, z)

Enter an augmented matrix in calculator:

$\boxed{2^{nd}}$ MATRIX ▶ EDIT , 3×4: $\begin{bmatrix} 1 & 1 & 1 & 2 \\ 2 & -1 & 3 & 9 \\ 1 & 2 & -1 & -3 \end{bmatrix}$

$\boxed{2^{nd}}$ MATRIX ▶ MATH
choose rref(

$\boxed{2^{nd}}$ MATRIX NAME [A] (or whatever your matrix name was)

ENTER

$$\begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 2 \end{bmatrix} \rightarrow \text{Means}$$

$x = 1$
$y = -1$
$z = 2$

So the solution to the system:
A point in 3-D: $(1, -1, 2)$

HW: SL book

p. 37 # 3-4 RC, 5bcef

p. 38 #1a Solve by hand.
#1cde Solve with grapher.

*Problem 1 looks funny in the book. Each problem is a system of three equations.

1.

a) $\left\{ \begin{array}{l} \\ \\ \\ \end{array} \right.$

Quiz Thursday:
SL 2.1 - 2.3